DNV·GL

Certificate No:
TAA00002WF

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Peripheral Equipment

with type designation(s)
FnIO M-Series Network Adapters and I/O Modules

Issued to
CREVIS Co., Ltd.
Gyeonggi-do, Republic of Korea

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature	**C**
Humidity	**B**
Vibration	**B**
EMC	**B**
Enclosure	**Required protection according to relevant rules shall be provided upon installation on board**

Issued at **Busan** on **2020-11-25**

This Certificate is valid until **2025-11-24**.
DNV GL local station: **Seoul**

Approval Engineer: **Dong Ho Park**

for **DNV GL**

Digitally Signed By: Andreas Kristoffersen
Location: DNV GL Busan, Korea

Andreas Kristoffersen
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

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Job Id: **262.1-034171-1**
Certificate No: **TAA00002WF**

Product description

FnIO M-Series Network Adapters and I/O Modules are as listed below:

Type	Model no.	Description
Network Adapter	MD9289	MODBUS TCP Network Adapter (Dual Type)
Network Adapter	M9289	MODBUS TCP Network Adapter (Single Type)
Network Adapter	M9386	EtherCAT ID Type Network Adapter (Single Type)
I/O Module	M7001	System & Field Power, Redundancy, Input 24Vdc, Output 2.0A/5Vdc, 18RTB
I/O Module	M12DF	Digital Input 16 Points, Universal (Sink or Source), 24Vdc, 18RTB
I/O Module	M1418	Digital Input 8 Points, Sink / Output 8 Points, Source, Diagnostic, 24Vdc, 18RTB
I/O Module	M1428	Digital Input 8 Points, Source / Output 8 Points, Source, Diagnostic, 24Vdc, 18RTB
I/O Module	M225F	Digital Output 16 Points, Sink, 24Vdc/0.3A, 18RTB
I/O Module	M226F	Digital Output 16 Points, Source, 24Vdc/0.3A, 18RTB
I/O Module	M2418	Digital Output 8 Points, Sink, Diagnostics, 24Vdc, 18RTB
I/O Module	M2428	Digital Output 8 Points, Source, Diagnostics, 24Vdc, 18RTB
I/O Module	M2618	Digital Output 8 Points, Sink, 24Vdc/2A, 18RTB
I/O Module	M2628	Digital Output 8 Points, Source, 24Vdc/2A, 18RTB
I/O Module	M317F	Current Input 16 Channels, 0~20mA/4~20mA, 12bits, 18RTB
I/O Module	M319F	Current Input 16 Channels, 0~20mA/4~20mA, 16bits, 18RTB
I/O Module	M347F	Voltage Input 16 Channels, 0~10Vdc/0~5Vdc/1~5Vdc, 12bits, 18RTB
I/O Module	M349F	Voltage Input 16 Channels, 0~10Vdc/0~5Vdc/1~5Vdc, 16bits, 18RTB
I/O Module	M4118	Current Output 8 Channels, 0~20mA, 12bits, 18RTB
I/O Module	M4158	Current Output 8 Channels, 0~20mA, 16bits, 18RTB
I/O Module	M4218	Current Output 8 Channels, 4~20mA, 12bits, 18RTB
I/O Module	M4258	Current Output 8 Channels, 4~20mA, 16bits, 18RTB
I/O Module	M4428	Voltage Output 8 Channels, 0~10V, 12bits,18RTB
I/O Module	M4468	Voltage Output 8 Channels, 0~10V, 16bits, 18RTB
I/O Module	M5914	Current Input 4 Channels, 4~20mA, HART Master, 16bits, 18RTB
Common Noise Filter	NBH-06-432-D	Common Noise Filter (Manufacturer: Cosel)

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Noise filter, 'NBH-06-432-D' manufactured by Cosel, should be connected between the power terminals and the power supply.

Compass safe distance:
- In the standard compass: 105 cm
- In the steering compass: 70 cm

Type Approval documentation

Technical documents :

- Specification	CVS-NWS-205001 Rev. 1.00	2020-10-27
- Modules Drawing	CVS-NWS-205002 Rev. 1.00	2020-10-27
- Jig Drawing	CVS-NWS-205003 Rev. 1.00	2020-10-27
- Part list	CVS-NWS-205004 Rev. 1.00	2020-10-27

Test Reports:

- Test program for FnIO M-Series	CVS-NWT-204001 Rev. 1.01	2020-10-27
- Environmental test report	OT-209-RRD-003	2020-09-02
- EMC test report	OT-207-RED-150	2020-07-24
- Inclination test report	ECU-2020-007985	2020-09-03
- Acoustic noise and signal test report	KOMERI-0601-20T3491(E)	2020-09-04
- Compass safe distance test report	2001-01064-001	2020-08-24

Type approval initial assessment report, DNV GL Seoul 2020-08-24.

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, December 2019.

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:
- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE